

BACKGROUND OF THE INVENTION

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1 jet propulsion unit is disposed forwardly of the  
2 transom and beneath the undersurface of the hull for  
3 improving its pumping efficiency while the motor is  
4 attached to the transom of the boat. In the Jordan  
5 U.S. patent, No. 4,459,117, a liquid jet propulsion  
6 unit is driven by a conventional outboard motor. The  
7 drive of the motor directly rotates an impeller which  
8 draws water into the impeller chamber and through an  
9 outlet chamber and nozzle to drive the craft forward.  
10 In the Miyamoto U.S. patent, No. 4,457,724, an  
11 apparatus for driving a surfboard includes an internal  
12 combustion engine mounted in a box which is mounted on  
13 the rear portion of the surfboard. A water jet  
14 propelling device is driven by the internal combustion  
15 engine for propelling the surfboard. The exhaust gas  
16 system in the water jet propelling device is  
17 positioned in the box. In the U.S. patent to Boyer et  
18 al., No. 4,942,838, an inflatable watercraft has a  
19 portable engine package. The engine package includes  
20 an internal combustion engine mounted in a thin  
21 fiberglass hull. The base plate of the hull includes  
22 a water inlet scoop for feeding water to the pump and  
23 an exhaust port for exhausting the water. The pumps  
24 high pressure water outlet is pointed in the aft  
25 direction above the water line to propel the craft by  
26 the reaction force resulting from the high velocity  
27 water jet. In the F.C. Clark U.S. patent, No.  
28 3,055,175, a marine propulsion unit takes a  
29 conventional outboard motor and replaces the prop unit  
30 with a marine jet motor using a pump to issue a jet of  
31 water to propel a boat. The Parker U.S. patent, No.  
32 5,356,319, is for a boat with a removably inboard jet  
33 propulsion unit in which the integral jet power unit  
34 is encased in a waterproof housing and positioned in

1 a well located in the hull and is mounted to be  
2 removed from the hull.

3 The present invention is directed towards an  
4 outboard jet boat in which the main fuel tank and  
5 controls are mounted within the hull of a boat while  
6 the outboard jet drive unit is mounted in a housing  
7 with an engine and is removably attached to the  
8 transom of the boat. The fuel tank and controls are  
9 connected between the hull and outboard drive through  
10 quick disconnect couplings. The housing is shaped to  
11 support an engine on a platform directly over the jet  
12 drive unit for actuating the jet drive unit through a  
13 clutch mechanism with the engine and jet drive  
14 positioned parallel to each other.

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16 SUMMARY OF THE INVENTION  
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18 An outboard jet drive boat apparatus has a boat  
19 hull having a transom and having a removably attached  
20 outboard jet drive attached to the transom. The  
21 outboard jet drive includes a housing sealed against  
22 the intrusion of water and has an engine mounting  
23 platform therein having an engine mounted thereon on  
24 flexible engine mounts. The housing has a sealable  
25 entrance through the top thereof and is removably  
26 attached to the transom of the hull. A jet drive unit  
27 is attached in the housing below the engine supporting  
28 platform and extends generally parallel to the engine  
29 from the front of the housing and through the rear of  
30 the housing. The jet drive unit is operatively  
31 attached to the overhead engine through a clutch  
32 mechanism. A main fuel tank is positioned inside the  
33 hull and is connected with a fuel line to an auxiliary  
34 fuel tank inside the housing and the auxiliary fuel

1 tank is connected to the engine for feeding fuel to  
2 the engine. The fuel pump is mounted in the housing  
3 to pump fuel to the engine from the auxiliary fuel  
4 tank and from the main fuel tank to the auxiliary fuel  
5 tank. Electrical controls are located in the hull and  
6 coupled through the housing to the engine to control  
7 the engine and jet drive unit. Quick disconnect  
8 couplings allow the fuel line and control lines to be  
9 rapidly connected and disconnected to the outboard  
10 drive unit.

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#### 12 BRIEF DESCRIPTION OF THE DRAWINGS

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14 Other objects, features, and advantages of the  
15 present invention will be apparent from the written  
16 description and the drawings in which:

17 Figure 1 is a sectional view taken through an  
18 outboard jet drive boat in accordance with the present  
19 invention;

20 Figure 2 is a sectional view of an outboard jet  
21 drive housing having a jet drive unit mounted therein;

22 Figure 3 is a rear elevation of the jet drive  
23 unit of Figure 2; and

24 Figure 4 is a block diagram of the connected fuel  
25 tanks.

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#### 27 DESCRIPTION OF THE PREFERRED EMBODIMENT

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29 Referring to Figures 1-3, an outboard jet drive  
30 unit 10 is shown attached to the hull of a boat 11 on  
31 the transom 12. The outdrive unit includes a housing  
32 13 having a platform 14 mounted therein and having a  
33 plurality of flexible engine mounts 15 attached to  
34 the platform 14. An internal combustion engine 16 is

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1 to a quick disconnect 36 where it can be quickly  
2 coupled or decoupled from an internal fuel line 37  
3 located inside the housing 13. The fuel line 37  
4 enters an auxiliary internal fuel tank 38 which has a  
5 fuel line 40 connected thereto which is connected to  
6 a fuel pump 41 for pumping the fuel from the auxiliary  
7 fuel tank 38 and from the main fuel tank 33 and into  
8 the fuel line 42 where it is fed directly into the  
9 fuel injectors of the engine 16. A fuel return line  
10 43 is connected to the auxiliary fuel tank 38 and to  
11 a de-aerator 44 having a bleed top 45 and having a  
12 return fuel line 46 from the engine 16 fuel injectors.  
13 A battery 47 is shown mounted within the housing 13  
14 and is connected through a ground line 48 to the jet  
15 drive unit 17. The engine and drive unit are  
16 controlled through electrical control lines 50 which  
17 is connected through a quick electrical connector 51  
18 which is a waterproof connector mounted through the  
19 housing 13 and to the engine 16 and clutch unit 27 to  
20 control the operation of the outboard jet drive unit.

21 The rear wall 21 of the housing 13 has a tow  
22 bracket 52 attached thereto for attaching a line. The  
23 jet drive unit 17 may also have an anti-cavitation  
24 plate 53 attached to the exhaust portion 54 of the jet  
25 drive unit.

26 As seen in Figure 4, the main fuel tank 33 having  
27 the filler cap 34 is connected through the fuel line  
28 35 to the auxiliary tank 38 having an auxiliary tank  
29 opening 55 and having the fuel pump 41 connected  
30 through the fuel line 40 from the auxiliary tank 38  
31 and through a line 42 to the fuel injectors and back  
32 through a de-aerator 44 from the fuel injectors and  
33 through the fuel line 43 back to the auxiliary fuel  
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1 tank 38. A breather 45 is connected to the de-aerator  
2 unit 44.

3 In operation, the hull 11 has the fuel tank 33  
4 installed therein along with all the controls and  
5 sensors. The controls and sensors are connected  
6 through the multi-line electrical conductor 50 while  
7 the fuel tank 33 is connected through the fuel line 35  
8 through the transom 12. The outboard drive unit 10  
9 can then be attached to the brackets 32 on the transom  
10 12 in a position to align the bottom of the unit with  
11 the bottom of the hull 23. Then, merely attaching the  
12 quick connect couplings 36 to the fuel line, connects  
13 the fuel lines to the outboard jet drive while  
14 connecting the quick coupling 51 connects the  
15 electrical controls. If the unit has to be removed  
16 for any reason, it can be disconnected from the  
17 brackets 32 by disconnecting the quick couplings 36  
18 and 51 to remove the entire unit. The outboard jet  
19 drive unit 10 is made by constructing a waterproof  
20 housing 13 mounting the jet drive unit 17 therein  
21 underneath the platform 14 and mounting the engine 16  
22 to the engine mounts 15 on the platform 14 and then  
23 connecting the belt drive clutch mechanism 27 between  
24 the engine 16 and the jet drive unit 17 through the  
25 pulley 28.

26 It should be clear at this time that an improved  
27 removable outboard jet drive boat has been provided  
28 which forms a permanent part of the boat while  
29 allowing the quick disconnection and removal of the  
30 entire unit. This provides the advantages of a  
31 conventional inboard jet drive unit with an onboard  
32 fuel tank and control. However, the present invention  
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